




The Army's Mission Command Battle Lab

Helping to Improve Acquisition Timelines

Jeffrey D. From ■ Brett R. Burland

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The mission of the Mission Command Battle Laboratory (MCBL) is to mitigate risk to current and future Army forces by examining and evaluating emerging concepts and technologies through experimentation, studies, and prototyping, while informing the combat development and acquisition processes. MCBL collaborates with the Army's Research Development and Engineering Command (RDECOM), the Defense Advanced Projects Research Agency (DARPA),

From is a retired Army acquisition officer who has served in numerous positions related to management, testing, combat developments, and professional military education. **Burland** is a retired Army officer who has served in numerous operational positions as an armor officer and as a logistician.



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Joint Forces Command (JFCOM), academia, the National Laboratories, industry, the Army acquisition community, Command and General Staff School (CGSS), and other organizations and allies around the world. Through this collaboration and process simultaneity, the MCBL is working to improve acquisition timelines and get capabilities to soldiers faster.

The several battle laboratories and experimentation and analysis elements in the Training and Doctrine Command (TRADOC) are the principal organizations for Army experiments and science and technology (S&T) endeavors. This article focuses on the efforts of Mission Command Battle Laboratory, Leavenworth, but all of these organizations do critical work supporting concept and capabilities development.

The process for linking S&T developments to Army programs of record can be confusing. In fact, there are multiple paths any given technology can take to reach the hands of soldiers. Whether it is a commercial product going through the Rapid Equipping Force (REF) Office or a DARPA product transitioning through experimentation to become an acquisition program of record, most promising technologies identified by the battle labs do get to soldiers. However, most materiel developers would agree that the transition time is too long. This article is not intended to document these paths but to highlight the critical role the Army Battle Labs—the MCBL in this case—play in reducing the time required to get needed capabilities in the hands of soldiers, regardless of the path.

First, it's important to highlight the key activities of the MCBL. Primary among these are executing experiments, demonstrations, evaluations and, in some cases, providing technology readiness level (TRL) assessment. From small, focused demonstrations and evaluations to large experiments, these structured events provide valuable feedback to S&T developers, informing their work and in turn increasing its quality for a more complete product. In executing these events, the MCBL serves as a conduit between warfighters, systems developers, and the S&T community, fulfilling its collaboration and process

simultaneity missions. It isn't difficult to visualize how bringing the S&T community, warfighters, and the materiel developers together at one experimentation venue can compress the time to develop systems. The rapid feedback and collaboration enable a more comprehensive and timely "test-fix-test" environment, enabling for example, materiel developers to better understand user requirements and technical transition issues.

Figure 1 depicts a comparison between the standard development timeline and a compressed pre-milestone (MS) C timeline resulting from this focused and intense S&T management and collaboration. The figure illustrates how improving pre-MS C development time can improve overall capabilities deployment/fielding times.

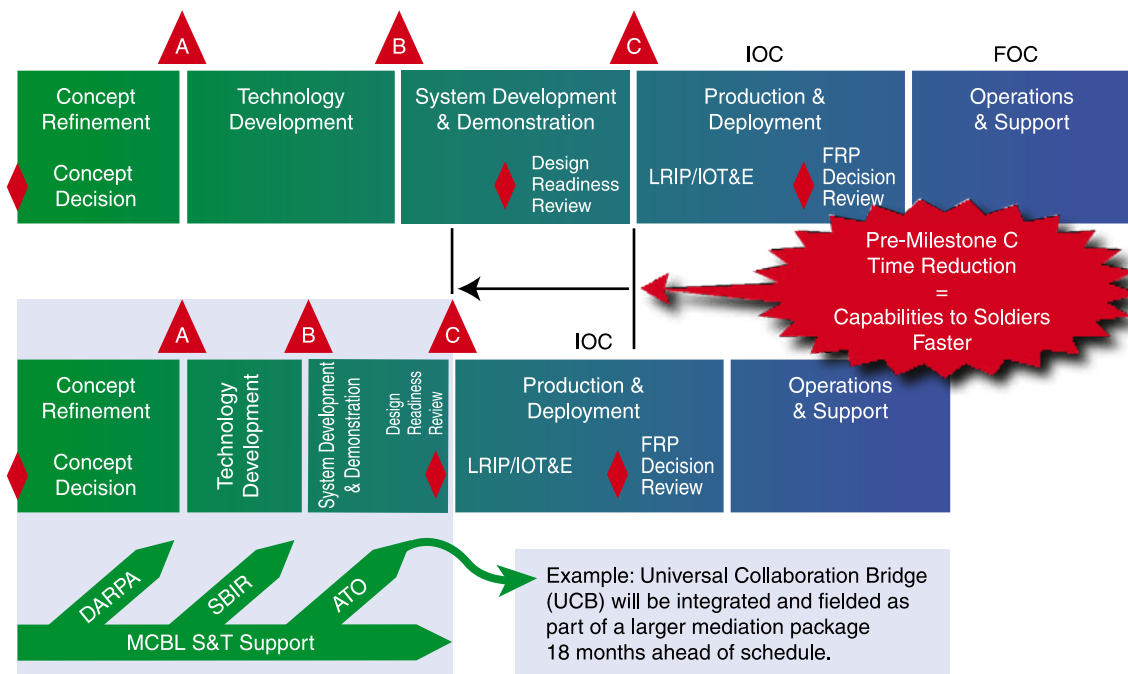
It is also well documented in acquisition literature that involving the warfighters early in systems development can result in significant resource savings and systems that better meet the needs of the warfighter. According to MCBL Deputy Director Calvin Johnson, "The MCBL has executed experiments involving S&T developers and the acquisition community's program managers from related program(s). These 'integrated' experiments are great venues for bringing key players together and facilitating early learning. And that's a great thing for the Army." The bottom line is that the MCBL is helping reduce the acquisition timelines for valuable capabilities and technologies through its close working relationships with S&T and acquisition organizations, as well as the Army's CGSS for input and warfighter feedback. No other venue in the Army can compare to MCBL and Fort Leavenworth with its potential for the richness of input and feedback related to Mission Command systems, concepts and capabilities.

Understanding the MCBL's role and conceptually how it can help to reduce acquisition timelines, we can now look at a specific example. The MCBL is the operational sponsor for the Collaborative Battlespace Reasoning and Awareness (COBRA) Army Technology Objective (ATO). The COBRA team is working on myriad technology programs, but their work on the Universal Collaboration Bridge (UCB) is a great example of the MCBL's ability to serve as a capabilities development conduit.

In May 2010, the MCBL planned and hosted the TRADOC-sponsored Talon Strike/Omni Fusion (TS/OF) experiment. TS/OF 10 investigated UK-US battle command interoperability between a 2010 U.K. Joint Medium Weight Capability Brigade and a 2010 U.S. Modular Force Division. Additionally, it provided an assessment of current and future force Battle Command capabilities to enable a more effective and interoperable U.K.-U.S. coalition force. This experimentation venue, where extensive collaboration was required between disparate forces (a U.K. brigade in England and the U.S. division in the MCBL), was a perfect fit for the UCB technology.

The UCB is a simple concept that essentially enables different chat systems to transparently interoperate. The COBRA team designed the tool so as not to require any changes to

The Impact of MCBL S&T Support



the existing chat software; clients or servers. UCB bridges together instant messages, chat rooms, and user presence and has demonstrated interoperability with: mIRC, Jabber/XMPP, CPOF native chat, web chat, and VMF free text. In TS/OF 2010, the UK Brigade was using open fire/J-Chat and the U.S. Division at Fort Leavenworth was using mIRC chat. UCB was employed on a server at the MCBL/Fort Leavenworth and operated transparently to the experiment role players.

The TS/OF 2010 experiment allowed the material developer, the Communications-Electronic Research, Development and Engineering Center (CERDEC), to identify issues and fix issues that would not have been apparent except in similar large-scale use. Specifically, the test revealed the UCB was not handling socket buffer overflow conditions adequately. This was fixed during the exercise, and UCB was able to work continuously after applying the fix. Other system parameters, (e.g., bumping max queue sizes, timeout values, etc.) were "tuned" to support the large-scale environment. After several iterative, on-the-fly adjustments, the UCB functioned as intended. The MCBL experiment afforded the CERDEC team the opportunity to make several adjustments (e.g. a test-fix-test environment) in a short period of time. Additionally, valuable feedback was provided to the developers from the MCBL technology support team and Army role players.

The UCB as of press time was scheduled for transition to Project Managers Battle Command (PM BC) and Force XXI Battle Command Brigade and Below (FBCB2) in May-June 2011 as a "bundled" mediation solution with another COBRA ATO product targeted at data mediation. The two products will be integrated with the PM BC's next generation data mediation products under Product Manager Common Software (PdM

CS), and UCB will focus on FBCB2 chat interoperability. This timeline is considerably advanced, given that the COBRA ATO doesn't end until 2012 and products and new capabilities would normally transition at that time. "The UCB technology was tested and matured in a rapid, agile environment and this was made possible by the collaboration and process simultaneity afforded by the MCBL," said Michael Anthony, CERDEC COBRA ATO manager.

Warfighters should see the UCB functionality nearly 18 months ahead of the normal transition. Similar work is taking place now with other ATOs and S&T projects throughout CERDEC and DARPA. And the MCBL will continue to get them in front of warfighters as early as possible.

In summary, the MCBL provides valuable support to the acquisition process. By leveraging the myriad complementary organizations and providing a venue for collaboration and timely warfighter feedback, the MCBL can provide valuable and tangible data to support faster development builds and systems, functionality and capabilities that better address warfighter needs. Through its experimentation capabilities and broad reach into the S&T and acquisition communities, MCBL can reduce the time developing technology, engineering, and manufacturing in the acquisition process. More specifically, the MCBL provides a venue to expose new technologies to Army warfighters, providing timely input to development efforts. The ultimate result from this aggressive S&T involvement in systems development is critical capabilities in the hands of the warfighter faster.

The authors can be contacted at jeffrey.from@us.army.mil and brett.burland@us.army.mil.